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New York State Education Department

Division of Trades Schools

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VOCATIONAL EDUCATION

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Purpose of the circular. This circular is a reprint from the annual report of the Education Department submitted by the Commissioner of Education to the Legislature in January 1910. It outlines in some detail the following points:

1 Industrial education as it has taken shape in the State

2 Place of industries in the elementary school

3 Intermediate industrial education

4 Trades schools at 16 years of age

5 Evening trade classes

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VOCATIONAL SCHOOLS

Introduction

Since the rather full discussion of the need of a new class of schools in connection with the public school system for the training of workmen in craftsmanship, which was presented as the Commissioner's special theme in the annual report of this Department for the school year of 1907, the matter has had very full consideration in all parts of the State. It is not too much to say that the attitudes taken at that time and their consequent consideration in the Legislature, resulting in the Industrial and Trade School Act of 1908, clearly gave New York a position of conspicuity and leadership in the country. In view of this, for the present year, at least, it is thought well to treat the subject under a separate title in the Department report.

Since the passage of the law there has been an increasing interest in the subject of industrial education within the State. The press has given much space to it; State federations of women's clubs have discussed it; every gathering of teachers has devoted a major part of its program to topics concerned with training for vocations; new school buildings are devoting space to shops and domestic science laboratories, and the people of many communities through men's clubs, and boards of trade have come together in public meetings to consider the question. The economic, industrial and educational considerations of industrial education as they have taken shape in this State may be summed up briefly under the following headings:

INDUSTRIAL EDUCATION FROM PUBLIC VIEWPOINT

1 That in the minds of the mass of the people, industrial education means the redirecting of our public schools through recognizing that they must be adapted to the needs of our people.

2 That industrial education used in its broadest sense is in no way antagonistic to the general function of all education which is to develop and train the mind, but the mind may be trained by means of many subjects, and some subjects or processes are best for one group of persons and other processes for other groups.

3 That effective education should (*a*) develop out of experience; (*b*) this experience should have relation to vocations and to the

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pupils' part in life, and (*c*) every school should be the natural expression of the life of its community.

4 That a school system should be flexible and adaptable to all conditions. It must give equality of educational opportunity and must not limit its facilities to those who can stay in school in order to reap its advantages. That we are called upon today to train our boys and girls in an industrial democracy, and our educational system will succeed just to the extent that we make it focus upon the industrial needs of each member of this democracy.

5 That a chasm exists between our educational system and our modern industrial life. In the school we have, on the one hand, discouraged boys and girls, abnormals, belateds and delinquents finding themselves unable mentally and physically to continue with credit in the culture process of our secondary schools; on the other hand, we find that science, invention and specialization continue to withdraw from the old-time chores — from former occupations which gave mental development, and to transplant them beside the automatic machine of our factories.

6 That education must concern itself with the proper selection of boys and girls to enter upon various callings in industrial, commercial or agricultural life for which their circumstances or natural abilities best fit them. That there are economic as well as educational considerations, quite different from the usually accepted and preconceived functions and responsibilities of the ordinary schools.

7 That industrial education ought to awaken a new school interest and so help retain boys and girls in school longer and contribute more powerfully to their development. That industrial training, taking pupils at 13 or 14 years of age, when they are of little value in a business way, when the education they have received is all right so far as it goes but hardly fits them for working places, would serve to give them the proper training to enter some branch of actual industrial work.

8 That the conservation of our children is as important as the conservation of other natural resources such as water power, forests and mines. Reliable statistics regarding the dropping out of pupils from our public schools are lacking. The number of belated children varies in different communities. It is increasingly difficult to hold children in school in those cities which have a large foreign population. It is believed that industrial training will have an economic value in the eyes of the parents and will assist towards keeping their children in school.

9 That education for vocations, both industrial and agricultural, will have a marked effect upon the natural wealth of a State which ranks first in manufacture and fourth in agriculture. The extent and variety of manufacturers in the State may be appreciated when it is stated that of the 339 classifications used in the census reports of manufacturing industries in the United States, 316, or 93.2 per cent, were reported for New York. There are approximately 850,000 wage-earners in the industries of the State making a yearly product valued at $2,500,000,000, with a yearly wage of $430,000,000. Our homes, churches, schools, streets, libraries, parks and other social betterments are supported by the people; a large share of the tax for the support of these institutions comes from our great industries and their workers. There is a direct relationship between the earning capacity of our people and the expenditures for civic welfare.

Organizations cooperating with the Education Department

A New York State branch of the National Society for the Promotion of Industrial Education has been organized. Its membership is composed of a representative body of manufacturers, teachers, industrial workers and publicists. Three meetings have been held in the past year. Through its public meetings in different parts of the State, its publications and bulletins, as well as through the personal efforts of its officers, the State branch is materially forwarding a propaganda for industrial education.

The Allied Printing Trades at their convention in Buffalo in August 1909, indorsed the purpose and methods of the State Education Department in relation to the establishment of industrial and trades schools. Its president, Thomas D. Fitzgerald, was active in bringing about this action as well as in opposing certain proposed State legislation in reference to industrial training which would be detrimental to the interests of organized labor as well as to public educational welfare.

The New York State Federation of Women's Clubs and the Western Federation of Women's Clubs have actively interested themselves in the matter of public industrial training for both boys and girls. The chairman of the education committee of the New York State Federation has cooperated in every possible way with the Division of Trades Schools in bringing before the women of the State the importance of definite industrial training for boys and a no less definite homemaking training for girls.

The New York State Department of Labor, through the Bureau of Statistics, has made an investigation throughout the State the past year to determine (1) the general relation of supply and demand in regard to skilled labor in the principal industries of the State; (2) the conditions under which boys and girls enter the industries and their chances for advancement; (3) the opinions of both employers and employees as to the value and need of industrial training. This investigation was made by an expert in industrial education, Prof. Charles R. Richards, director of Cooper Union.

To the question asked of the Trades Union organizations of the State, "Do you favor a public industrial or preparatory trade school which shall endeavor to reach boys and girls between 14 and 16 that now leave in large numbers before graduation?" 1500 answered "yes," 349 "no," 23 qualified "yes," 5 qualified "no," 574 not answering — total 2451.

To question asked employers in industry, "Would practical day trade schools, giving a specialized training of one year or more after the age of 16, help meet the problem of skilled employees in your business?" 744 establishments employing 198,865 employees, stated "yes," 341 establishments employing 78,194 employees, stated "no."

The whole investigation showed a striking concurrence of opinion on the part of employers and employees as to the value of the general industrial or preparatory trades school.

Attitude of American Federation of Labor

Representatives of the State Education Department have been in touch with officials of this organization with reference to the industrial training to which the State has committed itself. A special committee on industrial education of the American Federation of Labor has corresponded with the Commissioner of Education and the Chief of the Trades School Division. Both were invited to appear before this committee and present their views as well as to state the method of procedure in establishing industrial and trades schools within the State. The special committee afterwards reported to the full convention which met at Toronto in November 1909. An abstract from the committee's report follows:

If the American workman is to maintain the high standard of efficiency, the boys and girls of the country must have an opportunity to acquire educated hands and brains such as may enable

them to earn a living in a self-selected vocation, and acquire an intelligent understanding of the duties of good citizenship.

We favor the establishment of schools in connection with the public school system, at which pupils between the ages of 14 and 16 may be taught the principles of the trades, not necessarily in separate buildings, but in separate schools adapted to this particular education, and by competent and trained teachers.

The course of instruction in such a school should be English, mathematics, physics, chemistry, elementary mechanics, and drawing; the shop instruction for particular trades, and for each trade represented, the drawing, mathematics, mechanics, physical and biological science applicable to the trade, the history of that trade, and a sound system of economics, including and emphasizing the philosophy of collective bargaining.

In order to keep such schools in close touch with the trades, there should be local advisory boards, including representatives of the industries, employers and organized labor.

The committee recommends that any technical education of the workers in trade and industry being a public necessity, it should not be a private but a public function, conducted by the public and the expense involved at public cost.

There is a strong reaction coming in general methods of education, and that growing feeling, which is gaining rapidly in strength, that the human element must be recognized, and can not be so disregarded as to make the future workers mere automatic machines.

Experience has shown that manual training school teachers without actual trade experience, do not and can not successfully solve this great problem, and that progress will necessarily be slow, as new teachers must be provided, a new set of textbooks will have to be written, and the subjects taught in a sympathetic and systematic manner.

PLACE OF INDUSTRIES IN THE ELEMENTARY SCHOOL

It is important that some form of manual training be a part of the curriculum of the elementary school, since a large part of the population — three fourths to nine tenths, according to locality — never succeeds in entering any other school. Handwork in these grades can not be considered apart from the whole scheme of elementary education. Handwork and drawing in general education should be approached from four fundamental points: (1) To develop as much as possible of culture — enrichment of life through knowledge and appreciation of human achievement in art and industry; (2) to give the best possible start toward the life work in which the pupil will be most content and most efficient; (3) to furnish the best possible training for citizenship through developing a sense of social and industrial obligations; and (4) to give the best

possible preparation for the continuance of education in higher schools.

As cultural subjects, history and geography have a prominent place in the elementary curriculum. Industrial arts should be correlated with these subjects. The development and movement of industry and commerce is the most concrete and the most clearly continuous aspect of history and geography which can be selected. Their record is the record of how men learned to do, to think through the doing, and to transform the primitive conditions of life to a higher plane. The arts of weaving, basket making, clay modeling, and representation; the study of textiles, bamboo, jutes, reeds and dyes can be, and must necessarily be, related to the life of primitive people, to Indian life, to the life of our early settlers, to past and present problems of transportation, and to food and clothing. As a matter of fact, a proper study of industry and art can be made to touch in a hundred ways the topics of geography and history.

Industrial arts are equally serviceable from the vocational point of view. Acquaintance with the industries is a most promising form of vocational assistance to offer to those pupils about to enter gainful occupations. Manual dexterity must be developed in early youth. The art of representation by means of pictures is almost instinctive in small children and early training fixes a habit. Fundamental muscular movements must be developed in the elementary school. We must not wait until the child is 14 years of age before we begin to develop fundamental motor activity. Nimbleness of finger movement, a sense of form and color, a desire to work and work well, can be instilled in the early and impressionable years. All these factors have their direct vocational bearing.

The problem of training children to take their place in the world's work demands that the child be placed in a working environment, and the greater the resemblance between his present and future fields of activity, the more effective the training received. Industrial arts not being a matter of textbook or recitation but rather an actual reproduction of processes, furnish the pupils a rich industrial experience, develop adaptability through working over, under and with others and habituate pupils in a degree to such planning of work, estimating of cost, and economizing of materials as the outside world will eventually require.

The study of industrial arts in the elementary school includes much more than the various lines of handwork which have already

found lodging within the curriculum. It should be more than recreative or "busy" work. Manual training was introduced as a means of formal discipline. Taken in hand by students of child psychology it has been made to appeal effectively to children's motor and imitative instincts. So far, so good, but it should also be made to furnish some concrete applications for other school work. It is only recently that the significance and meaning of handwork in the elementary school, as bearing directly upon the future social and industrial efficiency of our workers, has had the attention it deserves.

Industrial work in the primary grades

In this work much attention has been given to the reactions which are secured from children. These depend largely upon the appeal which is made to their motor instincts and impulses. An educational element of value is the general acquaintance which pupils gain of the qualities of the common materials which are used, their measurement and their manipulation. This gives a foundation for the industrial work of the later school years. Children in the primary grades can gain an elementary knowledge of the nature and operations of the industries upon which their own lives are most immediately dependent. School gardening, weaving, basketry, leather work, etc. can be treated from this standpoint. Pupils can be led to the observation and reproduction of the homely, everyday activities which they see as meeting their own immediate needs, such activities as truck farming, and housekeeping; such necessities as clothing and shelter. Every attempt should be made to have the industrial work deal with the child's actual and immediate environment. By combining productive work with observation, there can be developed a habit of attention to the facts of this environment which ought to increase an appreciation of its activities.

Industrial arts in the primary grades of the State are no longer looked upon as a fad or frill. Primary teachers, trained in our State normal schools, are seeing the educational significance of drawing and constructive work. There is a growing appreciation of its educational content. More attention should be given to the true significance and meaning of the industrial arts. There should be a close relationship between drawing and making. An investigation of the manual training and drawing in the 84 cities and towns (omitting New York city) in the State, employing a school superintendent, shows that 80 of these places have drawing teachers

who give all, or nearly all of their time to giving instruction in drawing and simple constructive work, such as paper cutting, cardboard work and weaving. Outside of New York city there are 118 teachers of drawing in the State.

The drawing and construction work of the first six grades should be under one supervisor. Nothing is gained by a division of effort.

Industrial arts in the grammar grades

At 12 years of age children enter upon the stage of analytical and discriminating interest in the social and industrial life about them. The impulse towards reality repudiates the toy play and doll play of previous years. At this point constructive work should concern itself with articles for actual use or with the building of mechanical models very closely imitative of the originals.

Sex differentiation of handwork enters into consideration at this point: for boys, toward the larger industries, and for girls, toward the household arts. While every one admits that there are important social and ethical values in giving either sex a clear appreciation of the nature and requirements of the work done by the other, it is absolutely necessary to keep in mind that the work of the average pupil is beginning to have a significance to him through a recognized relation to his own future. To give shopwork to girls and sewing to boys is to play with a child's present interest and future work. It is such pedagogy as this that must be controverted.

The work in industrial arts at this point is not defined in the narrow sense as being industrial training. It does not imply training for efficiency in some one specific occupation or industry. Given at 12 years of age it would not necessarily serve to increase appreciably the pupils' earning capacity or to shorten the period of apprenticeship; neither does it presuppose a choice of vocation.

However, it is entirely practicable from the 6th to the 8th grades to give such notions of leading industries as shall be of large assistance towards the proper selection of a particular line of vocational or industrial training or in the case of those destined for the high school and college, toward the proper selection of a higher school.

The cultural values of constructive work and drawing, when given a fair proportion of school time — for example, five hours a week — are clearly of importance to all classes of pupils. The boy destined for a profession needs experience and knowledge that

will make him appreciate the factors of industrial life. The one destined for a highly specialized industry ought to have such acquaintance with other types as will show him his own in a proper perspective. Outside of New York city there are 45 cities and large villages that provide manual training to a greater or less extent in the elementary grades, the subject being taught by 78 teachers, of whom 41 are men. All of these cities and towns have it in the first six grades, while approximately two thirds of them have benchwork in the seventh and eighth grades.

Correlation between drawing and constructive work

Some cities and towns in the State have worked out a definite connection between drawing and constructive work. In the majority of places, however, the manual training in the upper grades is carried on independent of the work in drawing. The opportunity to furnish a motive for good design and representation by its direct application to problems of construction is too important to allow of any negligence in the most hearty cooperation between these two school activities, which might well be classed under one head — industrial arts. Making of designs to throw into the waste paper basket is not a sound educational procedure. Making of the design of a basket and then making the basket, is good educational practice.

Other materials and processes needed

Constructive work in the upper grammar grades is too closely confined to woodwork. This may be valuable as far as it goes, but the woodworking trades now include no more than a tenth of the more desirable openings. A boy that fails to do good woodwork may yet have in him the making of a printer, electrician, plumber or draftsman. Industry is now so varied that success or failure in any one line offers little evidence regarding one's probable success in others. It is strange that so few schools in the State have considered printing as a desirable form of industrial arts work. It is an effective way of teaching spelling, punctuation and composition. It makes possible the application of border lines, lettering and spacing which is emphasized in the drawing courses. It develops neatness, orderly arrangement, taste and appreciation of color. Every school can make use of a great variety of printed matter and this is apparently the one point at which industrial work may be carried on in continuous service of the school as a whole. It could be in so large a sense a regular industrial enterprise con-

ducted by the school, that it could give a peculiar sense of reality to the whole process. In one grammar school in Buffalo there is a printing plant where the boys are printing school programs, invitations to school exhibitions and school notes. Outside the State there are many schools that use their printing plants to print a school paper and to do some job printing for the superintendent's office. Bookbinding is an excellent adjunct in such a scheme. Boys and girls repair their school books, bind up and cover their compositions.

Electricity as a factor in industrial arts in the elementary school is one which can not be ignored in any cultural or vocational survey of modern industry. It is constantly becoming a more significant factor in the fields of the leading industries. It demands a unique type of ability, both mental and manual — an ability frequently discovered in pupils whose progress in many other lines of industrial work is unsatisfactory. Electricity is one of the industries in which a study by actual reproduction is most available, since the construction, alteration and operation of simple bells, motors, telegraph instruments, etc. is fully practicable at small expense in the usual school shop. Accuracy, neatness, order, initiative, skill, and manual intelligence can be developed by the manipulation of tools and materials other than those now in use in our upper elementary grades.

Industrial arts in rural communities

The benefits accruing from industrial training need not be confined to localities having the mechanical industries. New York is a great agricultural state ranking fourth in value of farm property, fourth in value of farm products, first in the expenditure for farm labor. There are 375,990 persons directly engaged in agricultural pursuits. The country school must find means for the presentation of vocational training from the agricultural standpoint. It is a mistake to extend to the rural school the same industrial work which is practical and desirable in the city schools. Boys in the country instead of devoting all of their manual training to woodworking exercises, might well learn how to set window glass, to mix paint and whitewash, to temper tools, sharpen saws, to make chicken coops, brooders, model gates and fences. We must get away from a single set of models which have been handed down from a Russian or Swedish system of manual arts.

Many rural districts hesitate to establish courses in household arts because of the supposed expense. School trustees examine the equipments and methods of the city schools and see no way of

accomplishing similar results without a direct imitation of the city methods. The Household Arts Department of Cornell University has developed an equipment and course of study which makes it practical to have household arts training in every rural community. A cooking equipment suitable for the rural conditions can be obtained for less than $50. A very satisfactory manual training equipment for a small school can be obtained for $87.50. Viewed in its proper light and in a sense of relationship of education to environment, the rural school offers a better opportunity to give adequate manual and household arts training than the city school. There can be a closer cooperation between the home and the school — a more direct application of handwork to environment than is possible in the city school.

Household arts instruction

Household arts in the upper grades needs fuller consideration than has been given to it in the past. While some schools in the State have sewing for the girls, there is not, with some notable exceptions, any definite, well organized purpose in the instruction. It lacks definite supervision. It is usually taught by the regular grade teacher who may have a relatively small conception of the value of such work and insufficient grasp of effective methods of teaching it. Girls in the primary grades may like to sew doll clothes, but girls in the upper grades have little interest in darning small holes in a bit of cloth, repairing a tear which they have themselves just made with a pair of scissors in order to be furnished with an exercise, or in cutting out and making an apron which can only fit a doll. Girls, like boys, desire to work on and with real things. They should be making full sized aprons, shirt waists, and darning real stockings.

The harmony of color and good design has a direct bearing upon the clothing that our girls wear and upon the home they live in. Surely harmony of colors, as applied to a bow of ribbon in the hair, or a shirt waist, is as much applied art as to color a bunch of nasturtiums on a piece of paper. Moreover, it is an art more effectively applied if the girl selects her materials and makes a shirt waist harmonizing with her complexion, form and pocketbook.

There is no teaching in the upper grades which can be more effective on the health, manners and morals of our girls than instruction in cooking. To learn the names of the bones of the body can not have the social, or even the educational value that a course in food preparation and household science may have. To memorize and accept as a fact that starch is manufactured from potatoes, can

not by any possible stretch of educational theory give the same mental discipline that a practical experiment in the cooking laboratory in which the girl discovers that starch is made from potatoes. Girls can not be taught to be neat and tidy by simple preachments. Many a girl has kept her hands cleaner and her hair more tidy when she has come in contact with the cooking teacher, the latter insisting and the girl seeing the reason for such insistence, that the food materials be properly handled.

A single illustration of what may be done with little money and much enterprise is given. A superintendent of schools in the State decided to have domestic science in the school system. A carpenter was engaged to tear down partitions and make three small rooms into one large room. He found six unused laboratory tables. These were planed on top and painted on sides and legs. Total cost $25. He engaged a plumber to pipe these tables for stoves and instal a sink (cost $64.50). The local gas company donated a stove. An unused book closet was converted to china closet (cost, none). Dishes and utensils cost $47.69. The same room is used for sewing. Teacher's salary $700. Total cost of equipment $137.19. The number of pupils in elementary sewing is 158; in cooking 106. There is also a class of high school girls. An extract from a letter stating what this teacher is doing in her work in cooking, follows:

The children work individually as much as possible. When material is expensive they work in groups, giving them the practice of planning their work to fit in with the work of others. Emphasis is laid on economy of material, gas and dishes used; the attractive serving of each dish; planning and cooking of the different dishes so that they could be served hot at the same time. While each child worked with very small quantities in school, the receipts given them were in large quantities and these were made at home, each child reporting on her work when she came to class next time. I tried to give them enough lessons under each head to give them an idea how anything which might come under that head could be prepared. In taking up the classes of food, the class put each food cooked in the class to which it belonged — proteid, fat or carbohydrate — and then made up menus and criticized menus to see if they were properly balanced. In working with meat, the tougher cuts were used, showing that with proper cooking, the more economical cuts, which are just as nutritious as the expensive cuts, could be made very palatable.

Outside of New York city there are 25 cities and large villages teaching domestic science; 27 teaching sewing. There are 40 cooking teachers and 25 sewing teachers employed for this work.

Relation of manual training to vocational training

Present tendencies indicate that manual training will become richer and perhaps assume a more vocational form and will occupy a larger place in the school program, as a result of the widespread agitation for vocational training. The latter will react on the manual training, compelling it to assume a more definite and pedagogical character. No less than five supervisors of manual training in the State have readjusted their courses of study since the advent of the industrial and trades school law. Superintendents and principals are now claiming that their manual training *is* practical while a short time ago they were equally insistent that it was a "disciplinary subject." There should not be any confusion as to the fundamental difference between the two forms of training. Manual training is an instrument designed to form a part of general training of all children, while industrial training is more or less specialized instruction which deals with selected groups.

Vocational education

By vocational education is meant all that training and instruction which purposely ministers to self-support and productive capacity. The study of science, mathematics and art may or may not be vocational according to its purpose, emphasis, and the type of students considered. The industrial and trades school law in the State provides for *industrial schools* for boys and girls who have reached the age of 14, and *trades schools* for pupils who have reached the age of 16. In other words, the Education Department is standing for two types of schools: (1) the "vocational school," "intermediate industrial school," or "industrial school" which will give better elementary school provision for the vocational needs of those likely to enter industrial pursuits; (2) "preparatory trades school," "preapprenticeship school" or "trades school" which offer special shop, laboratory and drawing room practice along a *chosen trade* pursuit. A marked distinction is made between these two types of schools. The policy of the Education Department can be understood by following carefully the aims and methods of each type as outlined.

INTERMEDIATE INDUSTRIAL EDUCATION

This form of vocational training is primarily for youths from 13 to 16 years of age in the fields of the trades and manufacturing industries, and does not assume in its students the completion of the eight year elementary course of study and does not assume to give complete trade training.

The vocational school must, from the standpoint of greatest advantage both to the individual and the community, train for practical work and at the same time secure an adequate training of the mind. In the language of school men, all the exercises in the vocational schools should be educative of the mind as well as the hand. Topics that can not be related to this conception should be excluded from the course of study.

Industrial training should begin (1) after the ordinary school arts, like reading, spelling, writing, drawing, arithmetic and grammar and the rudiments of history, geography and nature study are fairly completed, and (2) as soon as the muscles are strong enough to handle the lighter tools of industry safely and are sufficiently developed for the acquisition of skill in their use. Under ordinary conditions the vocational schools should be open to children who are 13 or 14 years of age and who have completed the first six grades. It is not assumed that in the years from 14 to 16 it is practicable to give a complete vocational education; in most cases the completion of such education must be found in the actual pursuit of the calling. A more definite preparation can be obtained in the system of trades schools which follow and supplement these schools.

An intermediate industrial school for children entering at 13 or 14 years of age should have a course extending from two to four years. The latter period is preferable for two reasons, first, because this length of time is necessary to produce the requisite mental and physical training for a life of progression in industrial efficiency, and second, because it enables the school to attract and hold the student from 14 to 16, when his growing power is greatest and his earning power least.

For the first two years the studies should be general in character, being designed to round out the elementary school — instruction laying the foundation of industrial efficiency and arousing a set of industrial interests that will demand the work of the next two years for their fulfilment. In other words, general mechanical training the first two years and "specialization" the last two years. This specialization will not come until the pupil is 16 years of age.

For the last two years the studies should be more specific in character. The first two years should have developed an interest in industrial subjects, and by this time the pupil ought to have determined what line of mechanical work he was best adapted for

and should then fit himself for a trade pursuit. The general aim of the last two years should be to make specific applications of subject-matter to the industries of the locality and its vicinity. The boy might spend the major part of his school time of the last two years in the shopwork. It is suggested that possibly a definite connection can be made between the vocational school and local apprenticeship systems that may exist in local factories.

The intermediate industrial school will not primarily aim at trades teaching because the trades are too many and too diversified and because the training would be narrow and intensive and would prevent the realization of the larger vocational qualities which such education aims to attain.

Specialization characterizes modern industry, but back of many groups of trades or factory processes are found certain elements of likeness in the materials employed, the tools used, and the general character of the product. While schools or courses can not be established to meet indivdual wants, it is at the same time feasible to discover in any school system having a population of 5000, or more, large groups of children whose interests, capacities and probable economic destinations justify the maintenance of a vocational school. Such cities have discovered that there are enough children who are going into college to justify a college preparatory course. In every portion of New York there is a considerable localization of industry, and there are enough workers in certain trades and industries to justify preparatory training looking towards these industries. Equality of educational opportunity demands that these communities do as much and do it as definitely as they are now doing for those pupils who expect to go on to college.

Practical aim

Three fundamental points need consideration in the practical aims of intermediate industrial education:

1 That this type of education is not to lay its emphasis on the training of leaders — except as an American democracy, every one has the right to lead if personal power and experience give him that advantage. Youths of promise can not and should not be kept down. Time and experience in the trade will develop leadership if the foundation is sure.

2 That it is not the purpose of this type of school to make vocational training incidental or subordinate to further liberal training. The many who are to enter our industries are of equal account with the few pupils who succeed in any type of school. Present educational facilities provide for the latter.

3 That it is not to confine itself to a narrow and highly specialized trade training. It is to lead boys and girls toward the industries with awakened sympathies and ambition for industrial careers with some knowledge of industrial qualities and with some conception of what the industries have to offer them.

Ideals to be reached

The ideals to be reached in such a school may be summed up under four headings:

1 The development of a part of the experience, intelligence and skill requisite in a given group of related industries. Courses in industrial arts can be devised which will give similar experience with the tools, materials, and processes involved in groups of related industries.

2 The adaptation of its work to the prevailing industries of the locality. Local financial support and sound pedagogy demand that industrial education shall grow out of community needs.

3 This type of school should serve as an agency for the proper and wise selection of occupation. Intelligent vocational selection is wellnigh impossible under present school conditions.

4 The development of certain large industrial and social qualities such as interest in work, ideals of workmanship, and industrial responsibility. It seems reasonable to believe that the best way to obtain such qualities is in connection with actual work in a school.

Method to be employed

The course of study will fail to accomplish its purpose unless the following principles are carried out:

1 The teaching of essentials in bookwork.

2 Teaching applications before theory. This is very important — application of mathematics to shopwork, shop accounts, business subjects, etc.

3 A definite correlation, by grouping related subjects under one subject.

4 Avoidance of the division of the school day into short periods.

5 Study under direction in the schoolroom. If home work is assigned, it should be along the line of working up notes, writing descriptive sketches, rather than the assignment of matter which has not been carefully explained beforehand.

Organization of subject-matter

That the subject-matter will vary according to the locality has already been made clear. The shopwork should result in products which are usable and under favorable conditions, salable, common sense will determine what is feasible and fair to all interests concerned. Pedagogical principles demand that the boys and girls attending this type of school shall deal with whole products, reproducing commercial conditions so that an abiding appreciation of rate of work may enter into the question of production. The factory school at Rochester has been successfully working on this basis. Others are approaching it.

The most effective method of approach in the bookwork will be along the lines of its application and with comparatively little study of pure forms. Mathematics, science, drawing, and to a slight extent even English and history, should grow out of, and manifest its relations to the concrete shopwork. It will be necessary in planning the bookwork to discover to what extent each subject should enter. The industrial and educational requirements of the trades are so varied that it is impossible to offer a single inflexible course of study. For example, if the student selects a trade that requires more mathematics than is offered in the given course he may be allowed to take extra work in this branch at the expense of some irrelevant subject.

Vocational vs. nonvocational studies

When the program of vocational studies has been determined it may be possible to introduce others that are frankly nonvocational, such as music and art. Caution must be used in this matter. It is possible to make a social and industrial citizen, to give vocational intelligence and vocational ideals by studying evolution of industry.

industrial hygiene, rates of compensation, relations between employers and employees. Formal and detailed work in the so called "cultural" subjects does not necessarily make for citizenship. In the Albany vocational school stress is laid upon the development of transportation and communication, the establishment and growth of cities together with their new code of civic life involved, the changes brought about by the concentration of capital and labor in production, and the civic duties and privileges of the modern industrial citizen. It is believed that the educational context of facts concerning industrial and economic development is greater than that of the study of facts relating to wars, boundaries of states, or development of political parties.

Organization and administration of industrial and trades schools

The State law provides that these schools shall be a part of the public school system but that their work is not to be mingled or confused with the work of the other schools. They occupy rooms of their own, have courses and teachers of their own. Experience has clearly demonstrated the wisdom of this provision. The Education Department provides three checks by which the vocational character of these schools can be preserved: (1) State inspection by a special agent; (2) requirement that shop teachers shall be men and women with practical training and experience in the industries; and (3) bookwork organized in relation to shopwork.

Much may be said in favor of having these schools under their own roof and working completely under their own program. There is thus provided an industrial atmosphere and such schools may be expected to develop their own social spirit. It is not always possible to start an industrial school in a separate building, but it is possible to select one, two or three rooms and make a beginning in an industrial school organization. To delay until a new building can be built for this special purpose is often to approach the solution of the problem ineffectively. New York city, Rochester (factory), Albany and Freeville (George Junior Republic) have separate school buildings for these schools. Yonkers has started its trades school in the high school building until the new building is built. Hudson, Schenectady, Lancaster, Buffalo, Rochester (vocational) and Gloversville have the industrial school organization in a school building which is used for another purpose. It requires time and tact to prevent the growth of obnoxious class

distinctions in these special schools, but time will solve the problem as it has solved it in our American universities.

Schools organized under the law of 1908

	TEACHERS			STUDENTS		
	Men	Women	Total	Boys	Girls	Total
Albany	2	3	5	49	38	87
Buffalo	2	0	2	40	0	40
Freeville	5	2	7	32	31	63
*ab*Gloversville	0	1	1	37	45	82
*a*Hudson	1	2	3	21	23	44
*a*Lancaster	1	0	1	38	0	38
New York	6	0	6	116	0	116
Rochester (boys)	6	0	6	100	0	100
Rochester (girls)	0	1	1	0	18	18
Schenectady	1	1	2	50	0	50
*a*Yonkers (trade)	1	0	1	25	0	25
Yonkers (vocational)	0	2	2	0	25	25

*a*Evening class also. Gloversville 16; Hudson 18; Lancaster 46; Yonkers 239.
*b*Not yet organized under trades school law.

TRADES SCHOOLS AT 16 YEARS OF AGE

The existing manual training courses in the high schools of the State are not trade courses, neither the manual nor the academic instruction being especially planned to be of direct vocational service. Their pupils are of the same general type, of the same age and of the same preparatory training as are the pupils of the classical courses. Their courses endeavor to develop the same type of intelligence, the same habits of thought and the same kinds of ability as do the other courses in the high schools. They are located in schools of the college preparatory type in which the instruction, mechanical as well as academic, aims to provide the mental discipline of the kind required of those who would continue their studies in higher institutions.

In filling this function, these courses are serving a useful purpose. However, the field occupied by the manual training courses in existing high schools, is entirely distinct and different from the field to be occupied by the trades schools as proposed under the State law.

Trades courses vs. manual training courses

The trades schools will differ from the manual training courses in the secondary schools in the following particulars:

1 Pupils enter the trades schools with a definite purpose of preparing for industrial careers.

2 The trades school absolutely abandons all college preparatory work.

3 There is almost no instruction in pure mathematics or pure science, but instead, a fair amount of time is given to such applied mathematics and applied science as is closely related to the trade selected by the pupil; in fact, all the instruction, whether in classroom, shop or laboratory, is designed so as to be directly usable.

4 The trades schools will necessarily take on varying forms in different localities.

5 They will not be parallel to our existing high schools in that they will not necessarily draw pupils who have completed the eight grades of the elementary school.

6 They will make a more or less direct connection with the intermediate industrial schools previously outlined.

7 Those students in the trades schools who have had preliminary industrial training in the vocational schools will be allowed to take highly specialized courses with their instruction concentrating upon the development of skill and knowledge of direct practical bearing.

Outlook for trades schools

Eventually trades schools must be established in every section of the State where there is a demand for such training. The Empire State can not forever neglect the training of workers for our great constructive industries; neither will our workers always allow educational authorities to ignore their needs. There will be many types — monotechnic and polytechnic — fitting in with every industry. For example, some time we may look for a series of preparatory trades schools for printers. In this State there are over 50,000 people employed in printing and allied trades. There are 5 cities that should have a school for printers and lithographers. We may look for at least 3 textile schools for the 75,000 people who are engaged in the textile industry. The State should contain at least one shoe trade or technical school to fit workers for an industry that employs about 17,000 workers. Through private enterprise, New York has a school for the workers on ready-made clothing. There are 130,000 people employed in this industry and 1 school is entirely inadequate and does not touch the problem in Rochester at all. The electrical machinery apparatus and supply industries require the services of 16,000 workers. A school of lower grade than an electrical engineering school would be of

much benefit to such people. At least 3 such schools are needed in the State. There are 55,000 men and boys employed in the foundry and machine shops of the State. There are at least 18 cities in the State that have sufficient iron working industries and workers to warrant machine trades schools. There are 2 large paper manufacturing centers within the State employing 12,000 workers. A high standard of manufacture, excellence of workmanship and personal ambition of workers in the State can not always be maintained without attention to the special educational needs of these workers. There are 15,000 people employed in car shops and railroad repair shops. Men's furnishing goods and shirt industries have over 26,000 workers; furniture making 16,000; planing mills 15,000, etc. A man's work is worthy of being dignified by special education fitting him for it. The quicker we realize it the better for the interests of the State.

Industrial and trade training for girls

There is no intention on the part of the State Education Department to ignore the problem of girls' training, and much that has already been stated can be applied to the work for girls. The aim of the vocational and trades courses for girls is twofold: (1) It is to enable them through the right sort of homemaking training, to enter homes of their own, able to assume household duties with an intelligent preparation and to perpetuate the type of home that will bring about the highest standard of health and morals; (2) the courses of trade instruction will also train for work in distinctly feminine occupations. The time is not far away when every girl will learn some specific kind of remunerative skilled work.

There is no conflict between these twofold purposes. It simply means that girls will earn a livelihood in some skilled work during the 3, 6 or 8 years after leaving school and prior to marriage, and will do so for their own and the good of society. The earning power of these girls during these years will raise the standard of living in their families and give the impulse to a higher level. It means, moreover, that after marriage the girls will find most useful that homemaking training which they had in their vocational school work.

Taking these two points of view together, it is clear that industrial education for girls should embrace those subjects which women should understand and which will be of use in life. Dressmaking, millinery and cooking should be taught not only with the idea of enabling girls to direct a household in a better and more economical

way, but also to make them proficient enough so that they can earn a living if economic conditions demand it.

It is increasingly evident that not only are the demands of modern life thrusting into the background the instruction that should be centered in the home, but also that the women are entering the industries. Of the 377 lines of employment listed in the census in 1900, women had entered all but 7, in greater or less numbers. Nearly 30 per cent of the workers in the factories of New York State are women and girls. If industrial and trade training for boys is to be considered, then it is clear that industrial training for girls can not be overlooked.

In the housekeeping courses the girls would be taught:

a To care for the rooms: sweep, dust, clean windows and paint, build a fire and care for the stove, sink and tables.

b To cook simple nutritious dishes in family quantities and to buy the materials for these dishes.

c To serve a simple meal and know something of its nutritive value, expense and fitness.

d To wash and iron the garments made in the sewing classes, the aprons worn for school work and the towels, table mats, and curtains used in the house.

e To keep a book of recipes used in cooking lessons.

In the trades school courses the girls would be given preparatory trade training for any trade for which there was sufficient demand. A few of the many possible courses which might be organized in girls' trades schools, are millinery, dressmaking, household design and furnishing, institutional cooking and kitchen management, hair dressing, ready-made clothing, bookbinding, box making, glove making, engraving, shirt making, etc.

EVENING SCHOOLS FOR INDUSTRIAL WORKERS

There is an urgent need for evening trade and technical classes for bettering the opportunities of men and women already employed in industrial vocations during the day. Existing day schools which have well equipped shops and drawing rooms can render no more important service than to offer such facilities to the industrial workers.

The Buffalo Technical High School is open for evening work. Most of the men are from the shops in the city. The subjects taught are architectural drawing, carpentry and joinery, forging, steam engineering and fitting, mechanical drawing, sheet metal drafting, mathematics, physics, architectural design, electrical work,

gas engineering, plumbing, pattern making, machine design, machine shop practice, mechanics, chemistry and surveying.

The city of New York contains several evening schools of trades using the equipment of the manual training high schools. Tuition is free. Work is given under practical teachers. Among the subjects taught are free-hand and commercial drawing as applied to publication, advertising and industrial purposes, mechanical and architectural drawing, carpentry and joinery, cabinet making, plumbing, machine shop work, electrical and steam engineering, electric wiring and installation, mathematics, industrial chemistry. The number of students who are taking industrial courses in the various evening high schools, is as follows: Stuyvesant Evening Trade School, 736; Evening Technical and Trade School, 926; Long Island City Evening High and Trade School, 775; New York Evening High School for Women, 349; Evening Elementary Industrial School No. 67, 324; and Evening Elementary Industrial School No. 5, 312.

No mention is made in this list of the sewing, dressmaking, millinery and cooking classes as conducted in the elementary evening schools which are not specifically evening trades schools.

The Schenectady Evening High School has an electrical course with the work so arranged as to meet the needs of mechanics connected with the General Electric Company who desire to secure additional training along electrical lines. The course covers the following studies, each receiving three hours per week: algebra, plane geometry, trigonometry, physics, chemistry, mechanical drawing, elementary machine design and dynamo construction. The school board intend to open the day industrial school for evening school work.

In Syracuse three of the evening schools offer courses in cooking. while one has a class in woodwork. The total number of students taking sewing is 86; number taking cooking, 36; number taking woodwork, 18. The evening high school has a class of 15 students in cabinet making, and two classes in mechanical drawing with a membership of 50 students, both of these classes being taught by shop men.

For the size of the city, Ithaca has a large evening school, the industrial subjects being mechanical drawing, wood and metal working, sewing and cooking. In the student body 47 different occupations are represented. The average attendance is 86 per cent. Out of a total of 154 pupils, 47 have elected industrial subjects.

The evening work that Little Falls is doing points the way to a similar work that might be done by a city of the same class. Six instructors are employed, two of whom are engaged in what might be called industrial work. There are 24 pupils in two classes — one mechanical drawing and the other practical mathematics. All of these students are engaged in the shops of the city.

Hudson offers the facilities of its industrial school to night school students. There are 18 men taking mechanical drawing and shop work. In Gloversville there is an evening class in glove making. Lancaster has an evening drawing school with 46 students, taught by a day school industrial teacher.

No attempt has been made to mention all the evening schools of the State that have industrial courses. The main object of these schools is to give men already employed in the trades, who know therefore at least a part of the trade in which they are employed, an opportunity to broaden their mechanical training and make themselves more efficient workmen.

The State has an insignificant number of evening drawing schools. The expense of maintaining such schools involves only the salary of teachers, heat and light. Such schools would be of incomparable benefit to industrial workers.

Final word

No note of disparagement of the work of the advanced technical schools or the manual training high schools is intended. The higher technical schools are of the highest advantage to the State. They might well be multiplied. The same may be said of the manual training schools of high school grade, but it should be known that they are essentially college preparatory schools, or schools of general culture and that they do little in the way of training workmen. The State now stands in need of training in craftsmanship. This is a land of educational opportunity and of free choice of work. The public has had the habit of providing schools which lead to professional, more than to industrial employments. This is a discrimination which is unjust to many of our people and it is clearly a disadvantage to the community. It can only be remedied by a new class of public schools.

Public school authorities should see to it that every boy and girl has a good elementary training in the "fundamentals" before selecting special industrial work. It is not the purpose of the State Education Department to urge an industrial school system of such a

character that it will prevent sound, fundamental education. After the ordinary school arts have been mastered pupils should be offered their free choice of schools which will train them in literary accomplishments and for professional employments, or for commercial or business life, or for craftsmanship. The community must stand fair between employments and between people. Every boy and girl of any account can learn to do something fairly well, and the community ought not to encourage him to do the thing that he can not do very well, but it ought to aid him to do whatever he may learn to do well. The choice must be left to the boy and to the parent. He must have his free chance, and if he has it he will generally make the most of it. Manifestly, the chance will have to come through schools which train for all kinds of vocations.

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